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L2: Entry 2 of 8

File: USPT

Dec 22, 1998

DOCUMENT-IDENTIFIER: US 5851507 A

TITLE: Integrated thermal process for the continuous synthesis of nanoscale powders

DATE FILED (1):19960903Detailed Description Text (20):

Tungsten Oxide: Commercially available tungsten oxide powder (-325 mesh size) was used as the precursor to produce nanosize WO.sub.3. The tungsten oxide powder was suspended in a mixture of argon and oxygen as the feed stream (flow rates were 2.25 ft.sup.3 /min for argon and 0.25 ft.sup.3 /min for oxygen). The reactor was inductively heated with 18 kW of RF plasma to over 5,000K in the plasma zone and about 3,000K in the extended reactor zone adjacent the converging portion of the nozzle. The vaporized stream was quenched through the converging-diverging nozzle. The preferred pressure drop across the nozzle was 250 Torr, but useful results were obtained at different pressure drops, ranging from 100 to 550 Torr. After undergoing a pressure drop of 100 to 550 Torr through the converging-diverging nozzle, the powder produced was separated from the gas by means of a cooled copper-coil-based impact filter followed by a screen filter. FIG. 11 is the TEM nanograph of the WO.sub.3 powder produced by the invention, showing it to be in the 10-25 nanometer range. The size distribution was narrow, with a mean size of about 16.1 nm and a standard deviation of about 6.3 nm. Variations in the operating variables (such as power input, gas pressure, gas flow rates, and nozzle throat size) affected the size of the powder produced. An XRD pattern of the product is shown in FIG. 12, which indicates that the phase present was WO.sub.3. To avoid condensation at the wall, argon was introduced tangentially at the nozzle walls. The inert gas provided cooling as well as a boundary layer to act as a barrier for any condensation on the nozzle walls.

Detailed Description Text (26):

Molybdenum Nitride: Commercially available molybdenum oxide (MoO.sub.3) powder (-325 mesh size) was used as the precursor to produce nanosize Mo.sub.2 N. Argon was used as the plasma gas at a feed rate of 2.5 ft.sup.3 /min. A mixture of ammonia and hydrogen was used as the reactant gases (NH.sub.3 at 0.1 ft.sup.3 /min; H.sub.2 at 0.1 ft.sup.3 /min). The reactor was inductively heated with 18 kW of RF plasma to over 5,000K in the plasma zone and about 3,000K in the extended reactor zone adjacent the converging portion of the nozzle. The vaporized stream was quenched through the

converging-diverging nozzle. The preferred pressure drop across the nozzle was 250 Torr, but useful results were obtained at different pressure drops, ranging from 100 to 550 Torr. The powder produced was separated from the gas by means of a cooled copper-coil-based impact filter followed by a screen filter. FIG. 17 is the TEM nanograph of the Mo.sub.2 N powder produced by the invention, showing it to be in the 5-30 nanometer range. The size distribution was narrow, with a mean size of about 14 nm and a standard deviation of about 4.6 nm. Variations in the operating variables affected the size of the powder produced. An XRD pattern of the product is shown in FIG. 18, which indicates that the phase present was Mo.sub.2 N. To avoid condensation at the wall, argon was introduced tangentially at the nozzle walls. The inert gas provided cooling as well as a boundary layer to act as a barrier for any condensation on the nozzle walls.

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NEWS	20	Aug 19	IFIPAT, IFICDB, and IFIUDB have been reloaded
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NEWS	24	Sep 16	Experimental properties added to the REGISTRY file
NEWS	25	Sep 16	Indexing added to some pre-1967 records in CA/CAPLUS
NEWS	26	Sep 16	CA Section Thesaurus available in CAPLUS and CA
NEWS	27	Oct 01	CASREACT Enriched with Reactions from 1907 to 1985
NEWS	28	Oct 21	EVENTLINE has been reloaded
NEWS	29	Oct 24	BEILSTEIN adds new search fields
NEWS	30	Oct 24	Nutraceuticals International (NUTRACEUT) now available on STN
NEWS	31	Oct 25	MEDLINE SDI run of October 8, 2002
NEWS	32	Nov 18	DKILIT has been renamed APOLLIT
NEWS	33	Nov 25	More calculated properties added to REGISTRY
NEWS	34	Dec 02	TIBKAT will be removed from STN
NEWS	35	Dec 04	CSA files on STN
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FILE LAST UPDATED: 10 Dec 2002 (20021210/ED)

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=> s nanosiz? (1) (chromium or molybdenum or tungsten or Group VI)

3467 NANOSIZ?

291563 CHROMIUM

74 CHROMIUMS

291565 CHROMIUM

(CHROMIUM OR CHROMIUMS)

186974 MOLYBDENUM

34 MOLYBDENUMS

186978 MOLYBDENUM

(MOLYBDENUM OR MOLYBDENUMS)

149020 TUNGSTEN

27 TUNGSTENS

149024 TUNGSTEN

(TUNGSTEN OR TUNGSTENS)

1263486 GROUP

827523 GROUPS

1778314 GROUP
(GROUP OR GROUPS)

195164 VI
29301 VIS
224251 VI

(VI OR VIS)

3118 GROUP VI

(GROUP(W)VI)

L1 107 NANOSIZ? (L) (CHROMIUM OR MOLYBDENUM OR TUNGSTEN OR GROUP VI)

=> s l1 and sulfid?

305458 SULFID?

L2 11 L1 AND SULFID?

=> d l2 ibib ab 1-11

L2 ANSWER 1 OF 11 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2001:904416 CAPLUS

DOCUMENT NUMBER: 136:40031

TITLE: **Nanosized particles of molybdenum sulfide** and derivatives and uses thereof

INVENTOR(S): Migdal, Cyril A.; Stott, Paul E.; Bakunin, Victor N.; Parenago, Oleg P.; Kuz'mina, Galina N.; Vedeneeva, Ludmila M.; Suslov, Andrei Yu

PATENT ASSIGNEE(S): Crompton Corporation, USA

SOURCE: PCT Int. Appl., 70 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001094504	A2	20011213	WO 2001-US14982	20010508
WO 2001094504	A3	20020613		

W: AU, BR, CA, IN, JP, KP, KR, MX, RU, SG, US, ZA

RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,

PT, SE, TR

PRIORITY APPLN. INFO.: US 2000-208573P P 20000602

OTHER SOURCE(S): MARPAT 136:40031

AB A lubricant compn. is disclosed that comprises: (a) a lubricant and (b) at least one **molybdenum**-contg. compd. in the form of surface-capped **nanosized** particles of the general formula: (Z)_n(X-R)_m wherein Z is an inorg. moiety comprising **molybdenum** and sulfur in the form of particles having dimensions in the range of from .apprx.1 to .apprx.100 nm; (X-R) is a surface-capping reagent wherein R is a C4 to C20 straight or branched-chain alkyl or alkylated cycloalkyl radical or radicals and X is a functional group capable of specific sorption and/or chem. interaction with **molybdenum**/sulfur moiety; n is the no. of mols. of Z in the particles; m is an integer representing the amt. of surface-capping reagents relative to a single particle; and the ratio of m to n is in the range of from .apprx.1:1 to .apprx.10:1.

L2 ANSWER 2 OF 11 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2000:221191 CAPLUS

DOCUMENT NUMBER: 132:224422

TITLE: Preparation and structural characterization of nano-sized amorphous powders of MoS₂ by .gamma.-irradiation method

AUTHOR(S): Chu, G.; Bian, G.; Fu, Y.; Zhang, Z.

CORPORATE SOURCE: Department of Applied Chemistry, University of Science

SOURCE: and Technology of China, Hefei, Peop. Rep. China
Materials Letters (2000), 43(3), 81-86
CODEN: MLETDJ; ISSN: 0167-577X
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB **Nanosize** amorphous powders of **molybdenum** disulfide
have been prep'd. by .gamma.-irradn. method in ambient pressure and at room
temp. The obtained ppt. was dried at 60.degree., then crystd. by
calcination in a flow of argon at 160-650.degree.. All the samples were
characterized by x-ray diffraction and extended x-ray absorption fine
structure (EXAFS). The results from x-ray diffraction anal. reveal that
the powder dried at 60.degree. is in an amorphous state; it was partly
crystd. when calcined at >300.degree.. The size of particles in the
sample calcined at 500.degree. is .apprx.10 nm. EXAFS anal. demonstrates
that the Mo species in the sample dried at 60.degree. are present in the
form of a chain-like structure with Mo-S-Mo bonds as basic building units,
similar to that in the cryst. MoS₂ compd., and with a high level of
disorder in the nearest coordination shell. The amorphous sample is
partly crystd. by treating at >300.degree., and some of the Mo-S-Mo bonds
are fractured to form Mo:S bonds in the process of crystn., but the level
of crystn. is still low even when treated at 650.degree.. Total sulfur
anal. shows that the sulfur is partly lost when the sample was calcined at
>300.degree..
REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 3 OF 11 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:170821 CAPLUS
DOCUMENT NUMBER: 132:199569
TITLE: Catalysis assisted characterizations of nanosized
TiO₂-Al₂O₃ mixtures obtained in molten alkali metal
nitrates. Effect of the metal precursor
AUTHOR(S): Harle, V.; Vrinat, M.; Scharff, J. P.; Durand, B.;
Deloume, J. P.
CORPORATE SOURCE: Institut de Recherche sur la Catalyse (CNRS),
Villeurbanne, F-69626, Fr.
SOURCE: Applied Catalysis, A: General (2000), 196(2), 261-269
CODEN: ACAGE4; ISSN: 0926-860X
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Mixts. of TiO₂ and Al₂O₃ (0, 5, 10 and 20 mol% Al₂O₃) were prep'd. by
reaction of metal salts with molten alkali metal nitrates. The powders
are constituted from nanosized anatase crystallites and amorphous alumina.
Physico-chem. characterizations reveal the powders to be homogeneous.
Ni-Mo **sulfide** catalysts were elaborated using these powders as
supports and tested in the reaction of hydrogenation of tetralin. The
decrease of the intrinsic catalytic activity per Mo atom, related to the
alumina content, is higher than expected for a regular mixing of oxides,
suggesting that alumina coats the anatase particles. On the contrary, it
was found that changing the aluminum precursor salt leads to a metastable
solid soln. which increases significantly the intrinsic activity.
REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 4 OF 11 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1999:77495 CAPLUS
DOCUMENT NUMBER: 130:99150
TITLE: Calcining mixtures with a polymer and metal salt for
preparation of ultrafine metal powder
INVENTOR(S): Gruenbauer, Henri J.; Broos, Jacobus A.; Van Buren,

Frederik R.
 PATENT ASSIGNEE(S): The Dow Chemical Company, USA
 SOURCE: PCT Int. Appl., 16 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9903627	A1	19990128	WO 1998-US12306	19980612
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 5998523	A	19991207	US 1997-896774	19970718
AU 9882561	A1	19990210	AU 1998-82561	19980612
AU 731338	B2	20010329		
EP 998363	A1	20000510	EP 1998-932749	19980612
EP 998363	B1	20020327		
R: AT, BE, CH, DK, ES, FR, GB, GR, LI, LU, NL, SE, PT				
BR 9810720	A	20000808	BR 1998-10720	19980612
JP 2001510237	T2	20010731	JP 2000-502907	19980612
AT 214989	E	20020415	AT 1998-932749	19980612
ZA 9806370	A	20000117	ZA 1998-6370	19980717
TW 432008	B	20010501	TW 1998-87111701	19980717
PRIORITY APPLN. INFO.:			US 1997-896774	A 19970718
			WO 1998-US12306	W 19980612
AB The solid-phase mixt. suitable for pyrolysis or calcination to fine metal powder contains: (a) liq. hydrophilic org. polymer, esp. a polyether polyol; (b) aq. salt soln. contg. the target metal at preferably .gtoreq.5%; and (c) coagulating agent, esp. alk. amine, amide, or alkanolamine. The mixt. is calcined to form the metal powder having av. particle size .ltoreq.1 .mu.m and sp. surface area .gtoreq.5 m2/g, and typically selected from transition metals, rare-earth metals, or heavy metals. The resulting metal powders are suitable for prepn. of industrial catalysts, ceramics, or electronic components, or for fillers in plastics or paint coatings. The typical mixts. for calcining at 700.degree. to obtain the powder having .apprx.20 nm particle size contain: oxypropylene polyol (mol. wt. 1000) at 30 wt. parts; ZrO(NO3)2.xH2O and Ce(NO3)3.6H2O at 6.14:1 wt. ratio, dissolved at 50 g in 40 g water, and used at 90 wt. parts; and aq. 25% NH4OH at 20 or 60 wt. parts. The similar mixts. prepd. with dry salts typically showed the particle size of .apprx.100 nm.				
REFERENCE COUNT:		3	THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT	

L2 ANSWER 5 OF 11 CAPLUS COPYRIGHT 2002 ACS
 ACCESSION NUMBER: 1998:793414 CAPLUS
 DOCUMENT NUMBER: 130:117206
 TITLE: Photooxidation of Organic Chemicals Catalyzed by Nanoscale MoS2
 AUTHOR(S): Thurston, T. R.; Wilcoxon, J. P.
 CORPORATE SOURCE: Sandia National Laboratories, Albuquerque, NM, 87108, USA
 SOURCE: Journal of Physical Chemistry B (1999), 103(1), 11-17
 CODEN: JPCBFK; ISSN: 1089-5647
 PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal
LANGUAGE: English

AB The authors describe expts. that explore the use of nanosize MoS₂ semiconductors for catalyzing the photooxidn. of phenol. The band gap of nanoscale MoS₂ can be tuned across the visible spectrum and d = 4.5 nm MoS₂ which has an absorbance edge near 550 nm photooxidizes phenol using only visible light (>450 nm) while smaller band gap d = 8-10 nm MoS₂ or wide band gap Degussa P-25 TiO₂ do not. The possibility of increasing the rate of photooxidn. of phenol by deposition of nanoclusters of MoS₂ on bulk semiconductor powders is studied. Small amts. (<5%) of nanoscale MoS₂ deposited onto TiO₂ can lead to significant (.apprx.2-fold) enhancements of phenol destruction rates compared to TiO₂ by itself.

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 6 OF 11 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1998:569133 CAPLUS
DOCUMENT NUMBER: 129:168427
TITLE: x-ray diffraction investigation on MoS₂ nanoparticles produced by CO₂ laser-assisted synthesis
AUTHOR(S): Borsella, E.; Botti, S.; Cesile, M. C.; Martelli, S.; Nesterenko, A.
CORPORATE SOURCE: Div. Fisica Applicata, ENEA, Frascati, I-00044, Italy
SOURCE: Materials Science Forum (1998), 278-281(Pt. 2, Proceedings of the Fifth European Powder Diffraction Conference, 1997), 636-641
CODEN: MSFOEP; ISSN: 0255-5476
PUBLISHER: Trans Tech Publications Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB CO₂ laser synthesis from gaseous precursor was successfully applied to produce **nanosized** MoS₂ particles. **Molybdenum** hexacarbonyl [Mo(CO)₆] and hydrogen **sulfide** were used as gas phase reactants. A detailed x-ray diffraction anal. of the as-synthesized powder confirmed the **nanosize** character of the MoS₂ powder (x-ray size .apprx.3 nm) and showed that the particle structure could be described as a turbostratically stacked layered system. After thermal treatment at 1000.degree. the powder underwent a restacking and ordering process. The x-ray reflection intensities and the line profile anal. of the (001) diffraction lines showed the retaining of turbostratic disorder and the appearance of "paracryst." distortions in the MoS₂ sandwich layers with an av. fluctuation parameter of g = 0.02.

L2 ANSWER 7 OF 11 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1997:792383 CAPLUS
DOCUMENT NUMBER: 128:68372
TITLE: Studies of photoredox reactions on nanosize semiconductors
AUTHOR(S): Wilcoxon, Jess P.; Parsapour, F.; Kelley, D. F.
CORPORATE SOURCE: Sandia National Laboratories, Albuquerque, NM, USA
SOURCE: Proceedings - Electrochemical Society (1997), 97-11(Quantum Confinement: Nanoscale Materials, Devices, and Systems), 16-27
CODEN: PESODO; ISSN: 0161-6374
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Light induced electron transfer (ET) from nanosize semiconductors of MoS₂ to org. electron acceptors such as 2,2'-bipyridine (bpy) and Me substituted 4,4',5,5'-tetramethyl-2,2'-bipyridine (tmb) was studied by static and time resolved photoluminescence spectroscopy. The kinetics of ET were varied by changing the nanocluster size (the band gap), the

electron acceptor, and the polarity of the solvent. MoS₂ is an esp. interesting semiconductor material as it is an indirect semiconductor in bulk form, and has a layered covalent bonding arrangement which is highly resistant to photocorrosion. ET occurs following photoexcitation of the direct band gap. Quantum confinement results in the smaller nanoclusters having higher conduction band energies, and therefore larger ET driving forces. The ET reaction energies may be varied by changing the electron acceptor, by varying the size of the MoS₂ nanocluster or by varying the polarity of the solvent. In addn., varying the polarity of the solvent affects the reorganization energy and the barrier to electron transfer. TMB is harder to reduce, and thus has a smaller ET driving force than bpy. The solvent polarity is varied by varying the compn. of acetonitrile/benzene mixed solvents.

L2 ANSWER 8 OF 11 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1997:217219 CAPLUS
DOCUMENT NUMBER: 126:323873
TITLE: Studies of photoredox reactions on nanosize semiconductors
AUTHOR(S): Wilcoxon, Jess P.; Parsapour, F.; Kelley, D. F.
CORPORATE SOURCE: Sandia National Laboratories, Albuquerque, NM, USA
SOURCE: Materials Research Society Symposium Proceedings (1997), 452(Advances in Microcrystalline and Nanocrystalline Semiconductors--1996), 601-606
CODEN: MRSPDH; ISSN: 0272-9172
PUBLISHER: Materials Research Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Light induced electron transfer (ET) from nanosize semiconductors of MoS₂ to org. electron acceptors such as 2,2'-bipyridine (bpy) and Me substituted 4,4',5,5',-tetramethyl-2,2'-bipyridine (tmb) was studied by static and time resolved photoluminescence spectroscopy. The kinetics of ET were varied by changing the nanocluster size (the band gap), the electron acceptor, and the polarity of the solvent. MoS₂ is an esp. interesting semiconductor material as it is an indirect semiconductor in bulk form, and has a layered covalent bonding arrangement which is highly resistant to photocorrosion.

L2 ANSWER 9 OF 11 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1995:500364 CAPLUS
DOCUMENT NUMBER: 122:276921
TITLE: Optical features of **nanosize** iron and **molybdenum sulfide** clusters
AUTHOR(S): Wilcoxon, J. P.; Samara, G.; Newcomer, P.
CORPORATE SOURCE: Org. 1152, Sandia Natl. Lab., Albuquerque, NM, 87185, USA
SOURCE: Materials Research Society Symposium Proceedings (1995), 358(Microcrystalline and Nanocrystalline Semiconductors), 277-81
CODEN: MRSPDH; ISSN: 0272-9172
PUBLISHER: Materials Research Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB In the bulk state FeS₂ and MoS₂ are optically opaque, narrow bandgap semiconductors with no optical applications. Nanosize FeS₂ and MoS₂ have bandgaps that can be adjusted to the visible and even UV region of the spectrum by control of the cluster size. This opens up a host of applications of these materials. as inexpensive solar photocatalysts. The band-gap of both materials shifts to the blue with decreasing size but ceases shifting when a size of .apprx.3 nm (in the case of MoS₂) is attained. The authors interpret this observation as a change from bulk quantum confinement of the hole-electron pair of a tiny semiconductor to a

set of discrete mol.-like transitions more characteristic of a large mol. Room temp. photoemission studies of these clusters demonstrate that, while photoemission shifts to the blue with increasing bandgap for large clusters, small clusters have photoemission exclusively from trapped sub-bandgap surface states. Chem. modification of the surface to introduce hole or electron traps can result in either an enhancement or a decrease in the photoluminescence. The authors report the results concerning chem. purifn. and preliminary surface characterization of MoS₂ clusters by chromatog.

L2 ANSWER 10 OF 11 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1994:228187 CAPLUS
DOCUMENT NUMBER: 120:228187
TITLE: Microemulsion-mediated synthesis of **nanosize molybdenum sulfide** particles
AUTHOR(S): Boakye, E.; Radovic, L. R.; Osseo-Asare, K.
CORPORATE SOURCE: Dep. Mater. Sci. Eng., Pennsylvania State Univ., University Park, PA, 16802, USA
SOURCE: Journal of Colloid and Interface Science (1994), 163(1), 120-9
CODEN: JCISA5; ISSN: 0021-9797
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A microemulsion-based method for the synthesis of molybdenum **sulfide** nanoparticles is reported. Molybdenum **sulfide** particles in the size range 10-80 nm were pptd. in water-in-oil microemulsions (water-contg. inverse micelles) formulated with polyoxyethylene (5) nonylphenyl ether (NP-5). The particles were synthesized in the NP-5/cyclohexane/water microemulsion system by acidifying ammonium tetrathiomolybdate solubilized in the water cores of the inverse micelles. Particle characterization was accomplished by chem. anal., transmission electron microscopy, and UV/visible spectroscopy. The small size and the cage-like nature of the microemulsion water cores limits particle growth and aggregation. The particle size is a function of the water-to-surfactant molar ratio and the av. no. of ammonium tetrathiomolybdate ions solubilized per water core. These trends are rationalized in terms of classical nucleation theory and aggregative growth concepts.

L2 ANSWER 11 OF 11 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1992:197430 CAPLUS
DOCUMENT NUMBER: 116:197430
TITLE: Microemulsion-mediated synthesis of **nanosize molybdenum sulfide** coal liquefaction catalysts
AUTHOR(S): Boakye, E.; Vaidyanathan, N.; Radovic, L. R.; Osseo-Asare, K.
CORPORATE SOURCE: Dep. Mater. Sci. Eng., Pennsylvania State Univ., University Park, PA, 16802, USA
SOURCE: Preprints of Papers - American Chemical Society, Division of Fuel Chemistry (1992), 37(1), 298-305
CODEN: ACFPAI; ISSN: 0569-3772
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Nanosize Mo **sulfide** particles have been synthesized in 0.134 M NP-5/cyclohexane/water and 0.4 M NP-5/Tetralin/benzyl alc./water microemulsions. The particle size varies with the water-surfactant molar ratio. The synthesis of Mo **sulfide** in Tetralin has potentially important technol. applications since catalyst prepn. does not involve particle harvesting. Advantage can be taken of the variation of particle size with the water-to-surfactant molar ratio to make particles of desired sizes for coal liquefaction. Liquefaction tests conducted is so far have

given high yields of hexane-sol. oils and the yield of oils is inversely proportional to particle size.

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NEWS	6	Apr 22	Records from IP.com available in CAPLUS, HCAPLUS, and ZCAPLUS
NEWS	7	Apr 22	BIOSIS Gene Names now available in TOXCENTER
NEWS	8	Apr 22	Federal Research in Progress (FEDRIP) now available
NEWS	9	Jun 03	New e-mail delivery for search results now available
NEWS	10	Jun 10	MEDLINE Reload
NEWS	11	Jun 10	PCTFULL has been reloaded
NEWS	12	Jul 02	FOREGE no longer contains STANDARDS file segment
NEWS	13	Jul 22	USAN to be reloaded July 28, 2002; saved answer sets no longer valid
NEWS	14	Jul 29	Enhanced polymer searching in REGISTRY
NEWS	15	Jul 30	NETFIRST to be removed from STN
NEWS	16	Aug 08	CANCERLIT reload
NEWS	17	Aug 08	PHARMAMarketLetter(PHARMAML) - new on STN
NEWS	18	Aug 08	NTIS has been reloaded and enhanced
NEWS	19	Aug 19	Aquatic Toxicity Information Retrieval (AQUIRE) now available on STN
NEWS	20	Aug 19	IFIPAT, IFICDB, and IFIUDB have been reloaded
NEWS	21	Aug 19	The MEDLINE file segment of TOXCENTER has been reloaded
NEWS	22	Aug 26	Sequence searching in REGISTRY enhanced
NEWS	23	Sep 03	JAPIO has been reloaded and enhanced
NEWS	24	Sep 16	Experimental properties added to the REGISTRY file
NEWS	25	Sep 16	Indexing added to some pre-1967 records in CA/CAPLUS
NEWS	26	Sep 16	CA Section Thesaurus available in CAPLUS and CA
NEWS	27	Oct 01	CASREACT Enriched with Reactions from 1907 to 1985
NEWS	28	Oct 21	EVENTLINE has been reloaded
NEWS	29	Oct 24	BEILSTEIN adds new search fields
NEWS	30	Oct 24	Nutraceuticals International (NUTRACEUT) now available on STN
NEWS	31	Oct 25	MEDLINE SDI run of October 8, 2002
NEWS	32	Nov 18	DKILIT has been renamed APOLLIT
NEWS	33	Nov 25	More calculated properties added to REGISTRY
NEWS	34	Dec 02	TIBKAT will be removed from STN
NEWS	35	Dec 04	CSA files on STN
NEWS EXPRESS		October 14	CURRENT WINDOWS VERSION IS V6.01, CURRENT MACINTOSH VERSION IS V6.0a(ENG) AND V6.0Ja(JP), AND CURRENT DISCOVER FILE IS DATED 01 OCTOBER 2002
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=> s nanosiz? particles (3a) (better or advantag?)

3467 NANOSIZ?

627433 PARTICLES

1 PARTICLESES

627433 PARTICLES

(PARTICLES OR PARTICLESES)

397 NANOSIZ? PARTICLES

(NANOSIZ? (W) PARTICLES)

291743 BETTER

23 BETTERS

291764 BETTER

(BETTER OR BETTERS)

216286 ADVANTAG?

L1 2 NANOSIZ? PARTICLES (3A) (BETTER OR ADVANTAG?)

=> d 11 ibib ab 1-2

L1 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2001:820268 CAPLUS
DOCUMENT NUMBER: 136:73137
TITLE: High-purity glasses and ceramics prepared by sintering compacts of **nanosized particles: advantages** and perspectives
AUTHOR(S): Clasen, Rolf
CORPORATE SOURCE: Department of Powder Technology, Saarland University, Saarbrücken, D-66123, Germany
SOURCE: Key Engineering Materials (2002), 206-213(Pt. 1, Euro Ceramics VII), 235-238
CODEN: KEMAAY; ISSN: 1013-9826
PUBLISHER: Trans Tech Publications Ltd.
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English

AB A review. The prepn. of high-purity glasses and ceramics via shaping and sintering of compacts of nanosized powders offers many perspectives for optical materials. Due to small diffusion paths inside a nanosized particle impurities can be efficiently removed in a reactive atm. This is state of the art for the prepn. of high-purity glasses for optical fibers. Alternatively, all kinds of dopings can be added to the compact before sintering. Of special interest are functional nanosized particles, which can be incorporated into the compact through the open pores. The starting materials used were made by flame hydrolysis. Com. available at a low price are silica glass powders (8-40 nm in size), alumina, zirconia and titania (20-30 nm in size). These powders are well suited for the prepn. of advanced materials because they are nonporous and spherical. For addnl. applications, esp. in the field of coatings, pure silica powders are not sufficient due to the small thermal expansion coeff. Therefore the flame hydrolysis process was modified and multicomponent (e.g. SiO₂, B₂O₃, Na₂O, Al₂O₃) nanosized glass powders were prepd. Compacts of these powders can be sintered to transparent coatings at temps. down to 650.degree.C.

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L1 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1995:765507 CAPLUS
DOCUMENT NUMBER: 123:304932
TITLE: Small-angle scattering with polarized neutrons at very low temperatures: A new spectrometer at ORPHEE
AUTHOR(S): Glaettli, H; Eisenkremer, M; Pinot, M; Fermon, C
CORPORATE SOURCE: DRECAM/SPEC, DSM, CEA Saclay, Gif sur Yvette, 91191, Fr.
SOURCE: Physica B: Condensed Matter (Amsterdam) (1995), 213&214(1-4), 887-8
CODEN: PHYBE3; ISSN: 0921-4526
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A spectrometer for small-angle scattering with polarized neutrons was installed at the ORPHEE reactor. It uses a beam of 8.0 +/- 0.5 .ANG. deflected from the cold neutron guide G5 by Ni-Ti multilayers and polarized by a supermirror. A superconducting magnet with a homogeneous horizontal field of 3.5 T and a diln. insert which cools a 4He-filled sample cavity to 0.2 K makes this spectrometer particularly suited for studies of spin-contrast variation using dynamic nuclear polarization. Examples of polarization-dependent scattering from polymers demonstrate the power of this method. Polarized neutrons are also an **advantage** in studying magnetic **nanosize particles**, e.g. to sep. the magnetic and nuclear contributions to

small-angle scattering.

```
=> s nanosiz? particles (3a) superior?
    3467 NANOSIZ?
    627433 PARTICLES
        1 PARTICLESES
    627433 PARTICLES
        (PARTICLES OR PARTICLESES)
    397 NANOSIZ? PARTICLES
        (NANOSIZ?(W) PARTICLES)
    122360 SUPERIOR?
L2      0 NANOSIZ? PARTICLES (3A) SUPERIOR?
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=> s nanosiz? particles (3a) enhance?
    3467 NANOSIZ?
    627433 PARTICLES
        1 PARTICLESES
    627433 PARTICLES
        (PARTICLES OR PARTICLESES)
    397 NANOSIZ? PARTICLES
        (NANOSIZ?(W) PARTICLES)
    653428 ENHANCE?
L3      1 NANOSIZ? PARTICLES (3A) ENHANCE?
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=> d l3 ibib ab

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L3  ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2002 ACS
ACCESSION NUMBER:      1997:451796  CAPLUS
DOCUMENT NUMBER:       127:179960
TITLE:                 The effect of particle solubility on the strength of
                        nanocrystalline agglomerates: boehmite
AUTHOR(S):             Kwon, Seongtae; Messing, G. L.
CORPORATE SOURCE:      Dep. Mater. Sci. Eng., Particulate Mater. Cent.,
                        Pennsylvania State Univ., University Park, PA, 16802,
                        USA
SOURCE:                Nanostructured Materials (1997), 8(4), 399-418
                        CODEN: NMAEE7; ISSN: 0965-9773
PUBLISHER:             Elsevier
DOCUMENT TYPE:         Journal
LANGUAGE:              English
AB  Nanosized powders readily agglomerate during processing and handling. The
    strength of the interparticle bonds can dramatically affect the strength
    of the agglomerates and subsequent consolidation. This paper focuses on
    the origin of agglomerate strength for <10 nm sized boehmite
    (.gamma.-AlOOH) powders. The agglomerate strength of boehmite gel is
    (.apprxeq.23 MPa) more than three times higher than ethanol-dispersed
    boehmite agglomerate. Based on a series of expts., it is demonstrated
    that soly. of the nanomaterials is largely responsible for increased
    agglomerate resistance to deformation and powder consolidation. A model
    is presented to explain how agglomerate strength increases as a result of
    the enhanced soly. of nanosize particles and
    pptn. of the solute at particle contacts during drying.
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